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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,695	11/09/2001	Hideo Yamamoto	Q67179	5833

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SUGHRUE, MION. ZINN  
MACPEAK & SEAS  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037-3202

EXAMINER

GRAHAM, ANDREW R

ART UNIT PAPER NUMBER

2644

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/986,695

Applicant(s)

YAMAMOTO ET AL.

Examiner

Andrew Graham

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4 and 5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4 and 5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2644

**DETAILED ACTION**

***Drawings***

1. The drawings were received on 3/16/05. These drawings are approved by the examiner. The previous relevant objections are hereby withdrawn.

***Specification***

2. The amendments made to the disclosure are acknowledged and are sufficient to overcome the previous relevant objections. Accordingly, said objections are hereby withdrawn.

***Claim Rejections - 35 USC § 112***

3. The amendments made to the claims in view of the previous rejections under 35 USC § 112 are acknowledged and are sufficient to overcome the previous relevant rejections. Accordingly, said rejections are hereby withdrawn.

***Response to Arguments***

Applicant's arguments filed 3/16/05 have been fully considered but they are not persuasive.

On page 10, lines 4-6, the applicant has stated, "Cherry does not teach calculation of attenuation and/or amplification factors to control the voltage delivered to the voltage pairs, i.e., no such factors are used to control the volume output from the speakers". The examiner respectfully disagrees, noting that the rejection of this claim was made in view of both d'Alayer de Costemore d'Arc and Cherry.

Art Unit: 2644

Cherry derives a DC voltage level for each of the control transistors (44,46,48,50) based on the balance setting of a potentiometer (52a)(col. 4, lines 49-53). This "amount of DC voltage" for each transistor equates to "attenuation and/or attenuation factors". These voltages are applied to the translating channels to control the gain of the audio signal passing therethrough (col. 4, lines 27-32). The "calculating" in the system of Cherry is performed by the potentiometer (62) which divides the throughput voltage (col. 5, lines 1-4). In the context of the control circuit (10) and adjustment device (12) of d'Alayer de Costemore d'Arc, the circuitry affecting the gain control (such as 62a, 70, 78, 44 for channel LR) equates to the function that would have been performed by the control circuit (10) by implementing the operation of Cherry into the system of d'Alayer de Costemore d'Arc, as the control circuit (10) of d'Alayer de Costemore d'Arc applies control to the adjustment device (12) for affecting changes in balance (col. 4, lines 59-63). This circuitry (10 of d'Alayer de Costemore d'Arc and 62a, 70, 78, and 44 for channel LR in Cherry) reads on the "fade volume control unit" as presently claimed.

On page 10, lines 10-12, the applicant has stated, "While the circuit shown in FIG. 3 may control total volume output it, it fails to disclose achieving this objective with the structure recited in claim 1". As stated above, the rejection of the relevant limitations of Claim 1 was made in view of d'Alayer de Costemore d'Arc in view of Cherry, not Figure 3 of Cherry alone. d'Alayer de Costemore d'Arc

Art Unit: 2644

teaches a control unit for translating physical input controls and applying variations in output balance control (col. 3, lines 27-32; col. 4, lines 59-63). This circuit (10) equates to the "fade volume computing unit" of the present claims. This circuit (10) does not perform the exact balancing function or procedure as claimed.

However, such a function or procedure was known in the art, as is taught by Cherry. It would have been obvious to implement the balance function taught by Cherry for the balance operation of d'Alayer de Costemore d'Arc for enabling a listener to place herself or himself in the center or other desired location in the surrounding field of sound without changing the total volume level of the four speakers. As such, the combined teachings of d'Alayer de Costemore d'Arc in view of Cherry would have made such a structure and corresponding objective obvious to one of ordinary skill in the art at the time of the invention.

On page 11, lines 1-4, the applicant has stated, "In Craven, the disclosed amplitude corrections are for compensating a waveform of sound partially absorbed, delayed or echoed at respective wavelengths so as to flatten the amplitude response (see, e.g., Summary of the Invention at column 3), and not for compensating a volume (sound level) attenuated at a specific position". This argument is moot in view of the newly applied reference of Milne, which clearly teaches predetermined speaker gains and transfer functions for a reproduction environment, wherein the presence of components in the reproduction environment affects the quality of reproduction.

Art Unit: 2644

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-2 and 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over d'Alayer de Costemore d'Arc (USPN 5271063) in view of Cherry (USPN 3702901) and Milne et al (USPN 5983087). Hereafter, "Milne et al" will be referred to as "Milne".

d'Alayer de Costemore d'Arc discloses a system for controlling the production of sound in a vehicle, wherein one of the features involves adjusting the respective sound output volumes between front (42) and rear (44) speakers (col. 4, lines 59-68 and col. 5, lines 1-3). The context and function of this system reads on "A volume controller for controlling volume balance between a front speaker and a rear speaker located within a vehicle". This volume adjustment is conducted by a function adjustment control (5) which is associated with a function selecting control (6) (col. 3, lines 54-59 and col. 4, lines 67-68 and col. 5, lines 1-2). These controls (5,6), along with the circuitry that converts the mechanical input to an electrical equivalent, reads on "a fade volume computing unit for computing an amplifying factor of an input signal for providing an increased volume at the rear or front speaker". The system of d'Alayer de Costemore d'Arc also includes a control unit (10) that initializes previously stored settings of the audio system output and also enables an adjustment circuit (12) to alter the output of an audio signal, based

Art Unit: 2644

on the controls provided by the function controls (5,6) (col. 4, lines 67-68 and col. 4, lines 1-10 and 27-63). This unit (10) reads on "a control unit". The system includes a memory for storing the audio function parameters, including the fade setting (col. 4, lines 1-3). Upon a change being made to the setting of the fade function, this new setting is applied and then stored (col. 5, lines 2-3). After the new setting has been stored, the operation of the program involves returning the operation of program to its starting point (col. 5, lines 43-46). Collectively, the storage of the new setting and the restarting of the program that controls the operation of the system reads on "capable of dealing with a next fade input with attenuations changed by the amplifying factor  $k_1$  and the attenuating factor  $K_1$  recorded and newly set upon completion of the fade volume computing". However, d'Alayer de Costemore d'Arc does not specify or clearly disclose:

that the amplifying factor  $k_1$  for providing an increased volume at the rear or front speaker is equal to a decreased volume at the front or rear speaker when an input signal is attenuated by an attenuating factor  $K_1$ , so that when a balancing point is moved from a prescribed position, a total volume within the vehicle is unchanged

that the control unit multiplies that signal supplied to the rear or front speaker by the amplifying factor  $k_1$

Cherry discloses a volume balance and fader control circuit for a four channel sound reproducing system wherein the average total volume of the sum of the four channels is not affected by adjusting the

Art Unit: 2644

balance and fader controls of the system (col. 1, lines 59-67 and col. 2, lines 1-3). In the system of Cherry, adjusting the balance or fader control merely changes the division of DC power and not the sum or overall total gain of the channels (col. 2, lines 16-20). Cherry discloses the system's use in an automobile (col. 3-lines 19-22 and see figures 2 and 3) and that the operator of the auto can balance himself to be in the center of sound (col. 3- lines 41-45). The context of the device also reads on "A volume controller for controlling volume balance between a front speaker and a rear speaker located in a vehicle" (Figure 2). Cherry discloses a balance control for the left and right speaker balancing as well as a fader control for front and back speaker balancing (col. 3-lines 63-67 and col. 4-lines 1-2) which together control the relative output volume of the four channels. Cherry further discloses a potentiometer which acts as the fader control for balancing the audio condition between the forward 22, 26 and back 20, 24 sets of speakers, wherein one end is connected to the first and third channels 36, 40 and the other end is connected to the second and fourth 38, 42 channels (col. 4-lines 40-58). The potentiometer is connected as a voltage divider with a movable contactor dividing the a fixed amount (for example  $k_1, K_1$ ) of DC voltage between the forward and rear sets of channels (col. 5, lines 1-4) but providing the total sum of DC voltage remains the same (col. 4-lines 49- 53). This potentiometer (62) and the connected resistances (70,72,74,76,78,80,82,84) involved with the application of the adjustment to the individual speaker circuits reads on "a fade



Art Unit: 2644

volume computing unit for computing an amplifying factor  $k_1$  of an input signal for providing an increased volume at the rear or front speaker ...which is equal to a decreased volume at the front or rear speaker when an input signal is attenuated by an attenuating factor  $K_1$ ". The initial setting of the potentiometer (50a), before adjustment, reads on "by the volume at a prescribed location". The effect of such a connection, Cherry discloses, is that a constant volume is established, despite the respective changes made to the fader controls (col. 5, lines 45-49). This reads on "so that when a balancing point is moved from a prescribed position, a total volume within the vehicle is unchanged". In the system of Cherry, the established volume controls are implemented through a transistor (46) which operates an amplifier (38) that together constitute a translating and amplifier stage (col. 4, lines 12-38). The application of such control over the amplitude of the signal applied to each speaker reads on "multiplying the signal supplied to the rear or front speaker by the amplifying factor  $k_1$  when the input signal supplied to the front or rear speaker is attenuated by the attenuating factor  $K_1$ ".

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to implement the fade control and gain adjustment method of the system of Cherry as part of the corresponding control program implemented in the control and attenuating stages of the system of d'Alayer de Costemore d'Arc. The motivation behind such a modification would have been that such a

Art Unit: 2644

modification would have collectively enabled a user operating the fade control in the system of d'Alayer de Costemore d'Arc to place the user at the center of the reproduced sound field or any desired location, without affecting the average total volume of the sound field. This constant sound volume would have been maintained during the process of balancing, which would have prevented the user from increasing the volume sound field to an undesirable degree while manipulating the relative volume of a speaker or a set of speakers involved with reproducing the sound field.

However, d'Alayer de Costemore d'Arc taken in view of Cherry does not specify:

that attenuations when acoustic waves from the front speaker and rear speaker are propagated to the prescribed location are previously recorded

that on the basis of these attenuations, the increased and decreased volumes at the front or rear speaker are determined

Milne discloses a processing system for a vehicle audio system, wherein the parameters for individual speakers in a particular environment may be obtained from a remote location.

Specifically regarding **Claim 1**, Milne teaches:

that attenuations when acoustic waves from the front speaker and rear speaker are propagated to the prescribed location are previously recorded (optimal parameters, including speaker gains are tried in a vehicle and stored; col. 3, lines 61-65; col. 4, lines 27-50; speaker

Art Unit: 2644

gain for a speaker comprises determination of relative amplification/attenuation of speaker)

that on the basis of these attenuations, the increased and decreased volumes at the front or rear speaker are determined (audio data is processed according to stored functions as well as received control data, which includes fade and balance functions, col. 2, lines 9-11; col. 5, lines 35-41)

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to incorporate the optimized system parameter implementing circuitry of Milne as part of the system that determines the individual output volumes for the speakers in the system of d'Alayer de Costemore d'Arc in view of Cherry. The motivation behind such a modification would have been that such vehicle-type adjustments would have enabled optimal performance to be empirically determined and installed in vehicle during assembly. Such settings would have accounted for particular properties of a specific environment, such as a sunroof or leather seats, while using standardized hardware.

Regarding **Claim 2**, d'Alayer de Costemore d'Arc taken in view of Cherry and Milne discloses:

The system of Cherry enables user to place himself or herself in the center of the sound field (col. 5, lines 33-36). The two respective gain controls provided are a balance and fade, wherein fade alters the relative levels of front and back speakers at all left-right balance positions within the vehicle space (col. 4, lines 20-26

Art Unit: 2644

and 27-36 and col. 5, lines 27-36). The signal processing of these individual controls is individually applied to the translating and amplifier stage. This context of operation for a fader, wherein any initial fader setting is enabled in the combined system, reads on "at a prescribed location within the vehicle" and "the prescribed position is located at the center of a front, at a center of a rear seat, or a center between the front seat and rear seat".

Regarding **Claim 4**, d'Alayer de Costemore d'Arc taken in view of Cherry and Milne discloses:

the attenuations (volume settings) are computed on the basis of an input indicative of a relationship between the prescribed position and positions where the front and rear speakers are located (fader control in Cherry enables balancing between front and back sets of speakers, col. 4, lines 59-63; such balancing enables a listener to place herself or himself at the center of sound within area defined by speakers, col. 2, lines 48-54; as such, control of 62 by user is suggestive of relationship between an initial or 'prescribed' position and a desired location of center of sound within the area defined by the speakers; for example, forward balance suggests desired location is closer to area of front speakers as compared to initial location, and rearward balancing suggests desired location is closer to area of rear speakers as compared to initial location).

Regarding **Claim 5**, the adjustment in the system of Cherry includes a main volume control (64) that controls the volume adjustments at each of the speakers (col. 5, lines 20-25) and d'Alayer

Art Unit: 2644

de Costemore d'Arc discloses such a function being the default of the adjustment control (col. 4, lines 3-5). Collectively, these two teachings read on "the increased volumes of the front or rear speaker and of the rear or front speaker are computed on an adjustment value in a level adjusting means to be connected to the front speaker and the rear speaker".

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham whose telephone number is 703-308-6729. The examiner can normally be reached on Monday-Friday, 8:30 AM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached at 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/986,695

Page 13

Art Unit: 2644

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Andrew Graham  
Examiner  
A.U. 2644

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May 31, 2005

9  
  
**XU MEI**  
**PRIMARY EXAMINER**